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FEMA 209, 130218

FLOOD INSURANCE STUDY

CITY OF EATONTON, GEORGIA

PUTNAM COUNTY

JUNE 19, 1989

Federal Emergency Management Agency

COMMUNITY NUMBER - 130218

12

NOTICE TO
FLOOD INSURANCE STUDY USERS

Communities participating in the National Flood Insurance Program have established repositories of flood hazard data for floodplain management and flood insurance purposes. This Flood Insurance Study may not contain all data available within the repository. It is advisable to contact the community repository for any additional data.

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FLOOD INSURANCE STUDY

CITY OF EATONTON,
PUTNAM COUNTY,
GEORGIA

1.0 INTRODUCTION

1.1 Purpose of Study

This Flood Insurance Study investigates the existence and severity of flood hazards in the City of Eatonton, Putnam County, Georgia, and aids in the administration of the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973. This study has developed flood risk data for various areas of the community that will be used to establish actuarial flood insurance rates and assist the community in its efforts to promote sound floodplain management. Minimum floodplain management requirements for participation in the National Flood Insurance Program are set forth in the Code of Federal Regulations at 44 CFR, 60.3.

In some states or communities, floodplain management criteria or regulations may exist that are more restrictive or comprehensive than the minimum Federal requirements. In such cases, the more restrictive criteria take precedence and the state (or other jurisdictional agency) will be able to explain them.

1.2 Authority and Acknowledgments

The sources of authority for this Flood Insurance Study are the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973.

The hydrologic and hydraulic analyses for this study were performed by the U.S. Geological Survey (USGS), Water Resources Division, (the Study Contractor) for the Federal Emergency Management Agency (FEMA), under Inter-Agency Agreement No. EMW-85-E-1823, Project Order No. 16, Amendment No. 1. This study was completed in February 1987.

1.3 Coordination

A coordination meeting was held by FEMA on March 12, 1985, at the Eatonton City Hall. The meeting was attended by members of the community, elected officials, and members of the City Planning, Building, and Engineering Departments. The purpose of the meeting was to inform the community of the nature and purpose of the Flood Insurance Study, to solicit community input, and to discuss flood-prone areas of the community.

On July 13, 1988, the results of this Flood Insurance Study were reviewed and accepted at a final coordination meeting attended by representatives of the Study Contractor, FEMA, and the community.

2.0 AREA STUDIED

2.1 Scope of Study

This Flood Insurance Study covers the incorporated area of the City of Eatonton, Putnam County, Georgia. The area of study is shown on the Vicinity Map (Figure 1).

Flooding caused by overflow of Rooty Creek was studied in detail.

Areas having low development potential or minimal flood hazards were previously studied using approximate analyses. The results were shown on the Flood Hazard Boundary Map for the City of Eatonton, Georgia (Reference 1) and are incorporated into this Flood Insurance Study.

The areas studied were selected with priority given to all known flood hazard areas and areas of projected development or proposed construction through February 1992. The scope and methods of study were proposed to and agreed upon by FEMA and the City of Eatonton.

2.2 Community Description

The City of Eatonton is located in northwestern Putnam County, in north-central Georgia. The city is 36 miles north of Macon, Georgia, and about 12 miles east of Monticello, Georgia. Eatonton is served by State Route 16, U.S. Routes 129 and 441, and the Norfolk Southern Railway. The 1980 population of Eatonton was reported to be 4,833 (Reference 2).

2.3 Principal Flood Problems

Flooding problems in Eatonton are due primarily to the overflow of Rooty Creek, which flows south along the eastern city limits. Major floods in Eatonton are the result of intense rainfall associated with frontal passages. There are no known gaging records for streams in Eatonton. The largest known floods occurred in 1902, 1908, and 1948. These floods produced discharges that had a recurrence interval of 50 years. There are no records of elevations or discharges for larger floods in the study area.

2.4 Flood Protection Measures

Flood protection measures are not known to exist within the study area.

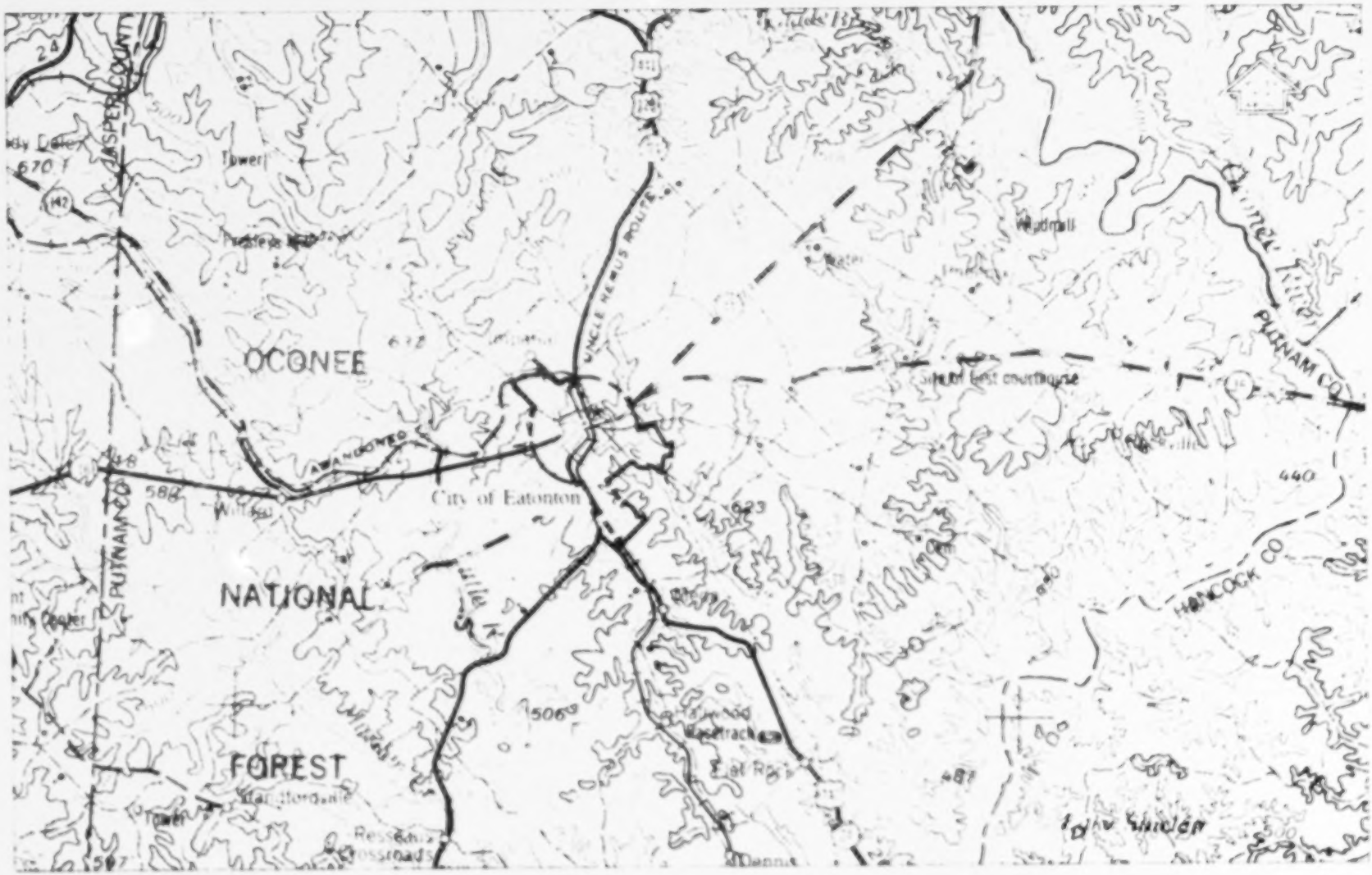


FIGURE 1

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF EATONTON, GA
(PUTNAM CO.)

APPROXIMATE SCALE

2 0 2 4 6 MILES

VICINITY MAP

3.0 ENGINEERING METHODS

For the flooding sources studied in detail in the community, standard hydrologic and hydraulic study methods were used to determine the flood hazard data required for this study. Flood events of a magnitude that is expected to be equaled or exceeded once on the average during any 10-, 50-, 100-, or 500-year period (recurrence interval) have been selected as having special significance for floodplain management and for flood insurance rates. These events, commonly termed the 10-, 50-, 100-, and 500-year floods, have a 10-, 2-, 1-, and 0.2-percent chance, respectively, of being equaled or exceeded during any year. Although the recurrence interval represents the long-term average period between floods of a specific magnitude, rare floods could occur at short intervals or even within the same year. The risk of experiencing a rare flood increases when periods greater than 1 year are considered. For example, the risk of having a flood that equals or exceeds the 100-year flood (1-percent chance of annual exceedence) in any 50-year period is approximately 40 percent (4 in 10), and, for any 90-year period, the risk increases to approximately 60 percent (6 in 10). The analyses reported herein reflect flooding potentials based on conditions existing in the community at the time of completion of this study. Maps and flood elevations will be amended periodically to reflect future changes.

3.1 Hydrologic Analyses

Hydrologic analyses were carried out to establish the peak discharge-frequency relationships for each riverine flooding source studied in detail affecting the community.

The discharge-frequency relationships for the 100-year flood on Rooty Creek were developed using USGS techniques (Reference 3). No adjustments were made for urbanization because the discharge adjustments were less than 10 percent. Land use for the watersheds was determined from topographic maps (Reference 4), recent city maps, and field inspections. The percentage of impervious area (used where greater than 10 percent), including areas served by storm sewers, was determined from land use in the watersheds according to USGS methods (Reference 5).

Peak discharge-drainage area relationships for the 100-year flood of Rooty Creek are shown in Table 1.

TABLE 1 - SUMMARY OF DISCHARGES

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (SQ MILES)	PEAK DISCHARGE (CFS) 100-YEAR
ROOTY CREEK		
at Gholston Road	9.21	3,060
at Oconee Street	7.37	2,700
1,600 feet downstream of Sumter Street	6.25	2,460

3.2 Hydraulic Analyses

Analyses of the hydraulic characteristics of flooding from the sources studied were carried out to provide estimates of the elevations of floods of the selected recurrence intervals.

Cross-section data for Rooty Creek were obtained by field surveys. Additional sections were estimated from adjacent surveyed sections and topographic maps (Reference 4). All bridges and culverts were field surveyed to obtain elevations and structural geometry.

Locations of selected cross sections used in the hydraulic analyses are shown on the Flood Profiles and the Flood Insurance Rate Map.

Water-surface elevations for the 100-year floods on Rooty Creek were computed using WSPRO, a step-backwater computer program (Reference 6). Water-surface profile elevations through culverts were computed by USGS computer program A526 (References 7 and 8). The starting elevation for the 100-year flood profile was determined by step-backwater methods.

Channel roughness coefficients (Manning's "n") used in the hydraulic computations were chosen based on field observation of channel and floodplain areas. Roughness values for the main channel ranged from 0.040 to 0.065 depending on width, depth of flow, curves, and vegetation. Roughness values for the floodplain ranged from 0.040 for the grassy areas to 0.150 for the densely wooded areas.

Flood profiles were drawn showing the computed water-surface elevations for floods of the selected recurrence intervals.

The hydraulic analyses for this study are based on the effects of unobstructed flow. The flood elevations shown on the profiles are thus considered valid only if hydraulic structures remain unobstructed, operate properly, and do not fail.

All elevations are referenced to the National Geodetic Vertical Datum of 1929 (NGVD). Elevation reference marks used in this study are shown on the map and described in the exhibit labeled Elevation Reference Marks.

4.0 FLOODPLAIN MANAGEMENT APPLICATIONS

The National Flood Insurance Program encourages State and local governments to adopt sound floodplain management programs. Therefore, each Flood Insurance Study provides 100-year flood elevations and delineations of the 100- and 500-year floodplain boundaries and 100-year floodway to assist communities in developing floodplain management measures.

4.1 Floodplain Boundaries

To provide a national standard without regional discrimination, the 1-percent annual chance (100-year) flood has been adopted by FEMA as the base flood for floodplain management purposes. The 0.2-percent annual chance (500-year) flood is employed to indicate additional areas of flood risk in the community. For each stream studied in detail, the 100- and 500-year floodplain boundaries have been delineated using the flood elevations determined at each cross section. Between cross sections, the boundaries were interpolated using topographic maps at a scale of 1:24000 with a contour interval of 20 feet (Reference 4).

The 100-year floodplain boundaries are shown on the Flood Insurance Rate Map. On this map, the 100-year floodplain boundary corresponds to the boundary of the areas of special flood hazards (Zones A, AE). Small areas within the floodplain boundaries may lie above the flood elevations but cannot be shown due to limitations of the map scale and/or lack of detailed topographic data.

For the streams studied by approximate methods, only the 100-year floodplain boundary was delineated using the Flood Hazard Boundary Map for the City of Eatonton (Reference 1).

4.2 Floodways

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 100-year flood can be carried without substantial increases in flood heights.

Floodways have not been shown or computed for this community. Along streams where floodways have not been computed, the community must ensure that the cumulative effect of development in the floodplain will not cause more than a 1.0-foot increase in the base flood elevations at any point within the community.

5.0 INSURANCE APPLICATION

For flood insurance rating purposes, flood insurance zone designations are assigned to a community based on the results of the engineering analyses. These zones are as follows:

Zone A

Zone A is the flood insurance rate zone that corresponds to the 100-year floodplains that are determined in the Flood Insurance Study by approximate methods. Because detailed hydraulic analyses are not performed for such areas, no base flood elevations or depths are shown within this zone.

Zone AE

Zone AE is the flood insurance rate zone that corresponds to the 100-year floodplains that are determined in the Flood Insurance Study by detailed methods. Whole-foot base flood elevations derived from the detailed hydraulic analyses are shown at selected intervals within this zone.

Zone X

Zone X is the flood insurance rate zone that corresponds to areas outside the 100-year floodplain, areas of 100-year flooding where average depths are less than 1 foot, areas of 100-year flooding where the contributing drainage area is less than 1 square mile, and areas protected from the 100-year flood by levees. No base flood elevations or depths are shown within this zone.

6.0 FLOOD INSURANCE RATE MAP

The Flood Insurance Rate Map is designed for flood insurance and floodplain management applications.

For flood insurance applications, the map designates flood insurance rate zones as described in Section 5.0 and, in the 100-year floodplains that were studied by detailed methods, shows selected whole-foot base flood elevations or average depths. Insurance agents use the zones and base flood elevations in conjunction with information on structures and their contents to assign premium rates for flood insurance policies.

For floodplain management applications, the map shows by tints, screens, and symbols the 100- and 500-year floodplains, the floodways, and the locations of selected cross sections used in the hydraulic analyses and floodway computations.

7.0 OTHER STUDIES

This Flood Insurance Study supersedes the previously printed Flood Hazard Boundary Map for the City of Eatonton (Reference 1).

8.0 LOCATION OF DATA

Information concerning the pertinent data used in the preparation of this study can be obtained by contacting the Natural and Technological Hazards Division, FEMA, 1371 Peachtree Street, NE., Suite 736, Atlanta, Georgia 30309.

9.0 REFERENCES AND BIBLIOGRAPHY

1. U.S. Department of Housing and Urban Development, Federal Insurance Administration, Flood Hazard Boundary Map, City of Eatonton, Putnam County, Georgia, December 1975.

2. U.S. Department of Commerce, Bureau of the Census, 1980 Census of Population, Number of Inhabitants, Georgia, Washington, D.C., January 1982.

3. U.S. Department of the Interior, Geological Survey, Water Resources Investigations Report 78-137, Floods in Georgia, Magnitude and Frequency, McGlone Price, 1978.

4. U.S. Geological Survey, 7.5 Minute Series Topographic Maps, Scale 1:24000, Contour Interval 20 Feet: Eatonton, Georgia, 1972; Medea, Georgia, 1972.

5. U.S. Department of the Interior, Geological Survey, Water Resources Investigation Report 77-57, Preliminary Flood-Frequency Relations for Urban Streams in Metropolitan Atlanta, Georgia, H.G. Golden, 1977.

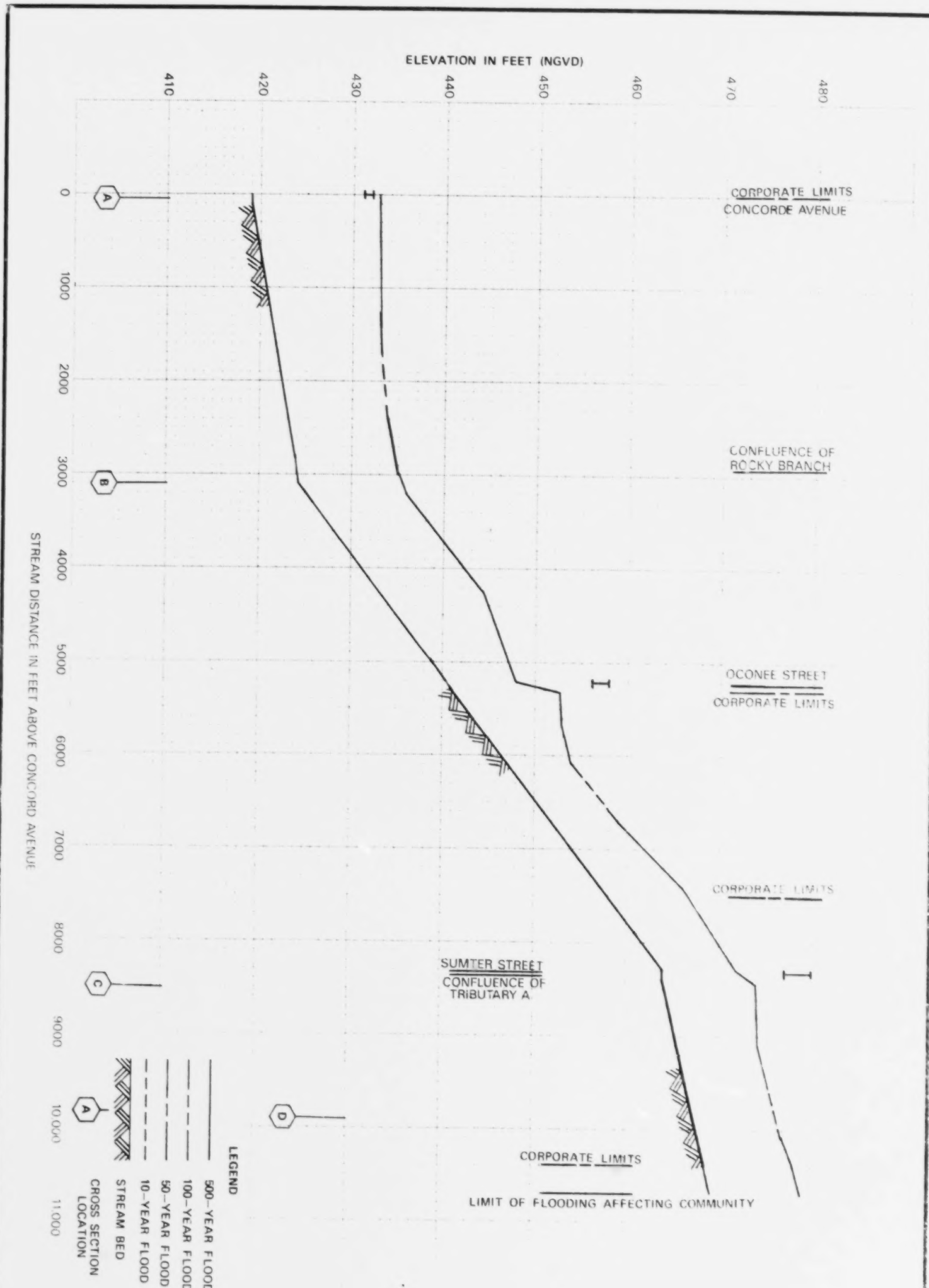
6. U.S. Department of Transportation, Federal Highway Administration, Report No. FHWA/RD-86/108, Bridge Waterways Analysis Model: Research Report, J.O. Shearman, W.H. Kirby, V.R. Snyder, and H.N. Flippo, July 1986.

7. U.S. Department of the Interior, Geological Survey, Water Resources Investigations, Measurement of Peak Discharge at Culverts by Indirect Methods, G.L. Bodhaine, Book 3, Chapter A3, 1976.

8. ————, Geological Survey, Water Resources Investigations, Preparation and Input Data for Automatic Computation of State-Discharge Relations at Culverts, H.F. Matthai, H.E. Stull, and Jacob Davidian, Book 7, Chapter 3, 1968.

ELEVATION REFERENCE MARKS

REFERENCE MARK	FLOOD INSURANCE RATE MAP PANEL	ELEVATION (FEET NGVD)	DESCRIPTION OF LOCATION
1	0005	577.34	standard disk in northwestern corner of Putnam County Courthouse southwest of intersection of Marion Street and Jefferson Avenue
2	0005	433.20	chiseled square on top of downstream floor of bridge, 2.7 feet from northwestern end of Concord Avenue bridge over Rooty Creek
3	0005	453.81	top of nail 3 feet above ground in power pole located 40 feet downstream of Oconee Street, 200 feet east of centerline of Rooty Creek
4	0005	480.88	top of bolt on top of southwest upstream curb of Sumter Street bridge over Rooty Creek



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FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF EATONTON, GA

(PUTNAM CO.)

FLOOD PROFILES

ROOTY CREEK